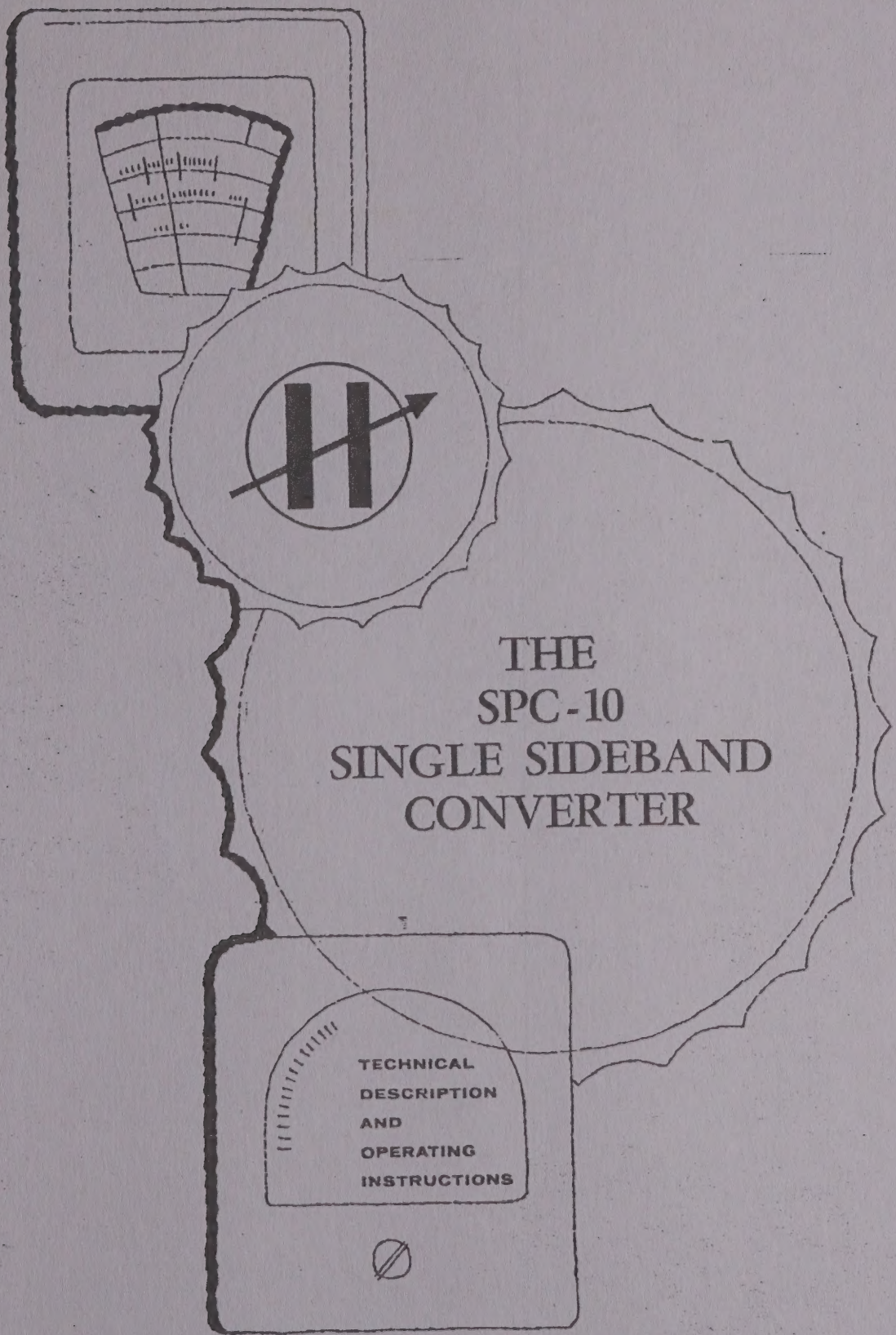
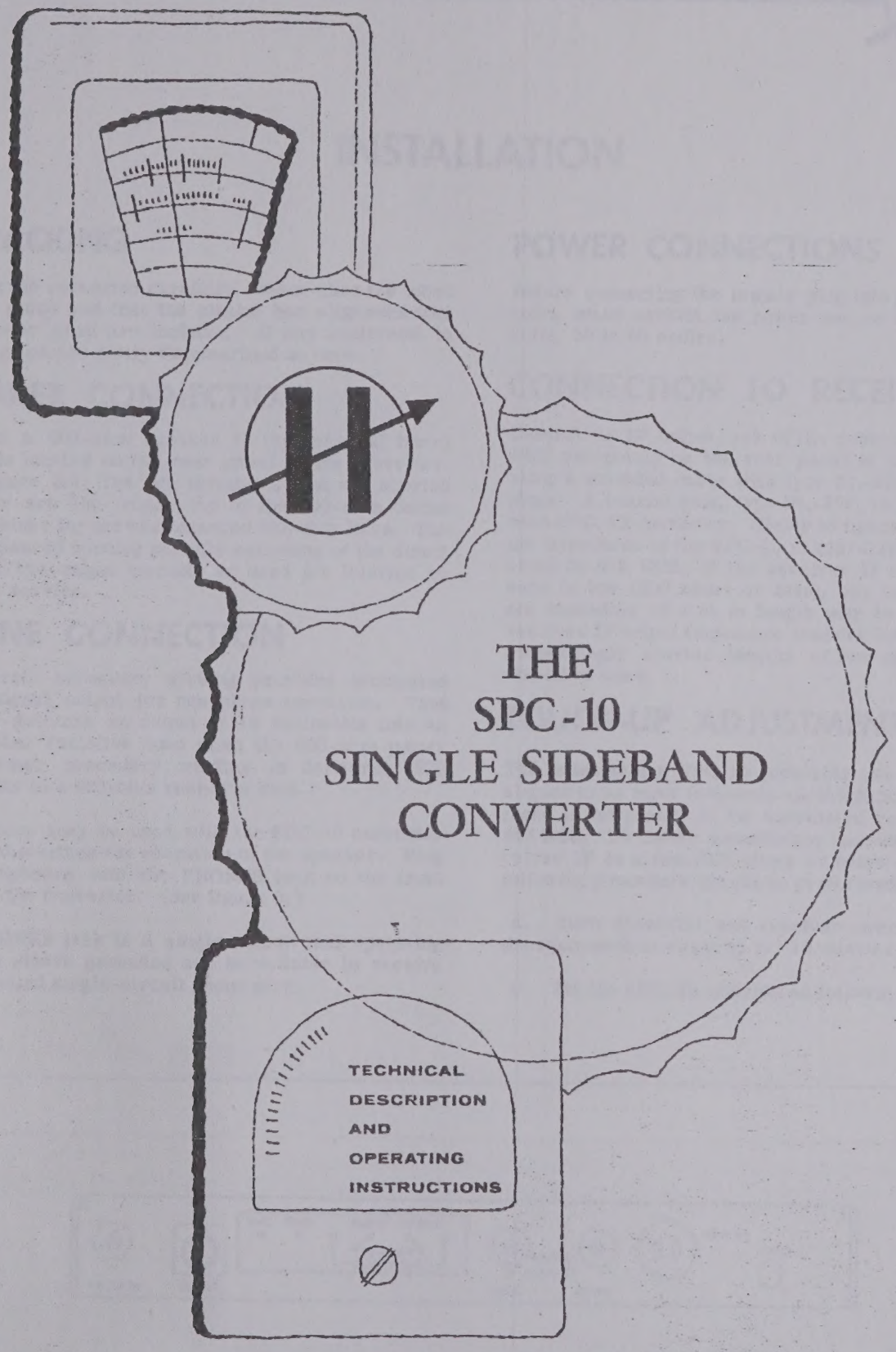


THE SPC-10 SINGLE SIDEBAND CONVERTER

TECHNICAL DESCRIPTION AND OPERATING INSTRUCTIONS

HAMMARLUND

The Hammarlund Manufacturing Co., Inc.
460 West 34th Street, New York 1, N. Y.
International Division: 13 East 40th Street, New York 16, N. Y.



THE SPC-10 SINGLE SIDEBAND CONVERTER

TECHNICAL DESCRIPTION AND OPERATING INSTRUCTIONS

HAMMARLUND

The Hammarlund Manufacturing Co., Inc.
460 West 34th Street, New York 1, N. Y.
International Division: 13 East 40th Street, New York 16, N. Y.

INSTALLATION

UNPACKING

Unpack the converter carefully. Make sure the tubes are in place and that the plastic hex alignment tool and power cord are included. If any equipment is missing, please notify Hammarlund at once.

SPEAKER CONNECTION

Connect a 600-ohm speaker to the terminal board which is located on the rear panel of the converter. (See figure 2.) The two terminals that are shorted together are the center tap of the 600-ohm output transformer for use with balanced 600-ohm lines. The split balanced winding permits balancing of the direct kind in the output circuit, as used for teletype or similar service.

PHONE CONNECTION

A separate secondary winding provides attenuated audio signal output for headphone operation. This winding delivers an output of 15 milliwatts into an 8,000-ohm resistive load when the 600-ohm power transformer secondary winding is delivering 500 milliwatts to a 600-ohm resistive load.

Headphones may be used with the SPC-10 converter without disturbing the operation of the speaker. Plug the headphones into the PHONES jack on the front panel of the converter. (See figure 3.)

The PHONES jack is a single-circuit jack operating with the sleeve grounded and is suitable to receive any standard single-circuit phone plug.

POWER CONNECTIONS

Before connecting the female plug into power receptacle, make certain the power source is 105 to 125 volts, 50 to 60 cycles.

CONNECTION TO RECEIVER

Connect the IF output jack of the receiver to the INPUT receptacle on the rear panel of the converter, using a shielded cable with type PL-259 terminating plugs. A coaxial plug, type PL-259, is supplied with each SPC-10 converter. (Refer to figure 2.) The input impedance of the SPC-10 is approximately 10,000 ohms at 455 KCS. If the receiver IF output impedance is low (200 ohms or less), any shielded cable not exceeding 10 feet in length may be used. If the receiver IF output impedance is above 200 ohms, correspondingly shorter lengths of low capacity cable should be used.

TOUCH-UP ADJUSTMENTS

The Hammarlund SPC-10 converter has been factory aligned to an input frequency of 455 KCS. No adjustment is necessary if the associated receiver IF is 455 KCS. To insure satisfactory operation if the receiver IF is a few KCS above or below nominal, the following procedure should be performed:

a. Turn converter and receiver power on. Allow the equipment to warm up for 10 minutes.

b. Set the SPC-10 controls as follows:

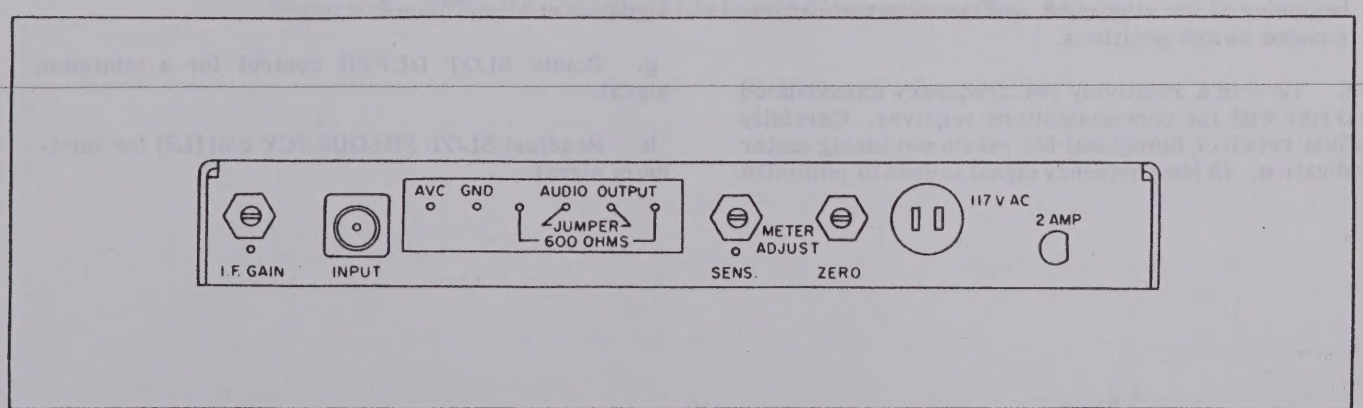


Figure 2. Connection Points at Rear of Chassis

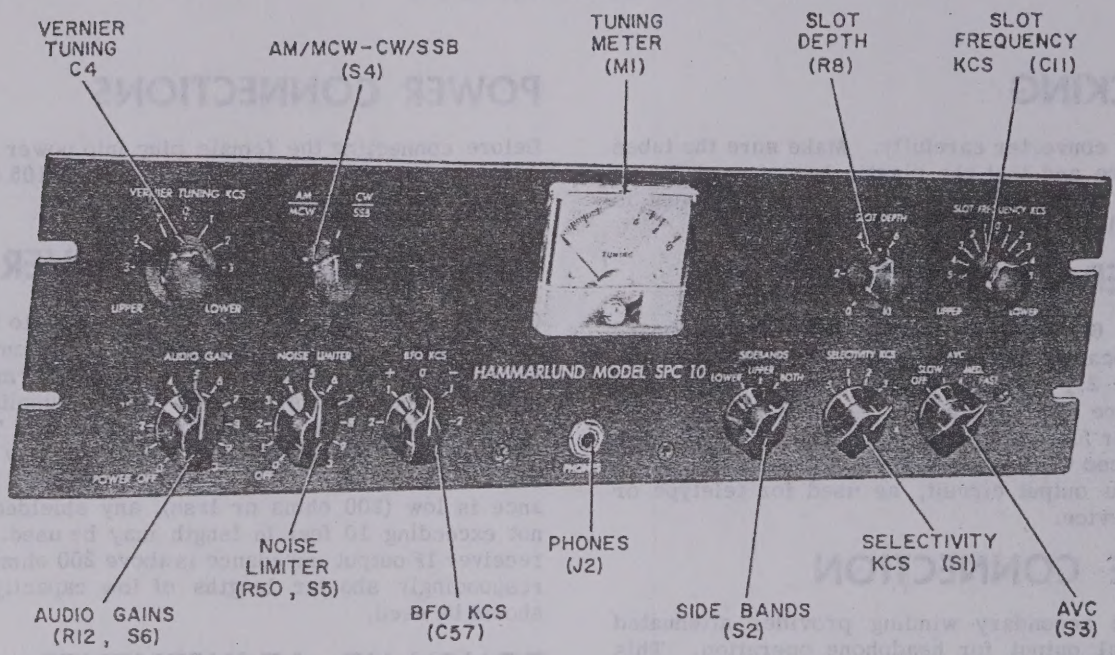


Figure 3. SPC-10 Single Sideband Converter, Front Panel

AUDIO GAIN to audible level
SLOT FREQUENCY KCS to UPPER 5 position
VERNIER TUNING KCS to 0 position
BFO KCS to 0 position
AVC to MED position
AM/MCW-CW/SSB to CW/SSB position
SELECTIVITY KCS to . 5 position*
SIDEBANDS to LOWER position*
NOISE LIMITER to OFF position

* Use the 3 KCS and BOTH switch positions at the beginning of the alignment and then use the recommended switch positions.

c. Tune in a relatively low frequency unmodulated carrier with the communications receiver. Carefully adjust receiver tuning dial for maximum tuning meter indication. (A low frequency signal is used to minimize receiver IF drift while adjustments are being made.)

d. Rotate the PASSBAND ADJ. coil (L6, figure 4) until a beat note is heard in the speaker. Adjust for zero beat. Use hex alignment tool that is supplied with equipment.

e. Place SLOT FREQUENCY KCS control at 0 position.

f. Adjust SLOT FREQUENCY coil (L2) until the signal is at a minimum.

g. Rotate SLOT DEPTH control for a minimum signal.

h. Readjust SLOT FREQUENCY coil (L2) for minimum signal.

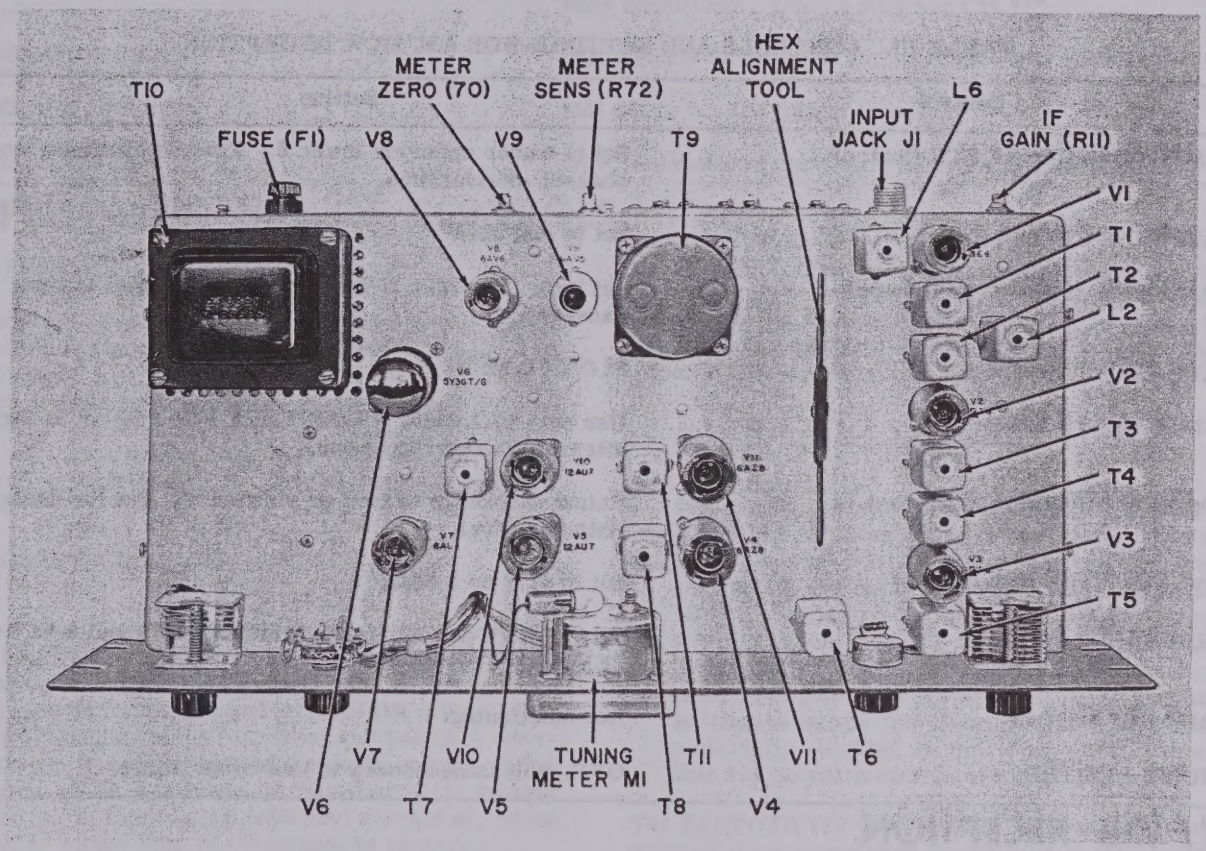


Figure 4. SPC-10 Single Sideband Converter, Top View

OPERATION

AM/MCW RECEPTION

Table III lists the front panel controls and their respective settings for initial AM/MCW operation. Tune in signals with receiver and operate all receiver controls, except IF and audio, as normally done. (Refer to figure 3.)

TABLE III. CONTROLS AND SETTINGS FOR AM/MCW RECEPTION

Control	Setting
SLOT FREQUENCY KCS Control	Set to either upper or lower 5. Tune to eliminate co-channel interference.
AM/MCW-CW/SSB Switch	Set to AM/MCW.
PASSBAND TUNING KCS Switch	Set to 0. Use only if desired to move signal across passband.
AVC Control	SLOW or MED.
SLOT DEPTH Control	Use only with SLOT FREQUENCY KCS control to further attenuate interfering signal.
POWER-AUDIO GAIN Control	Rotate clockwise to turn on converter. Set for desired listening level.
SELECTIVITY KCS Control	Set to 1, 2 or 3 KCS.
SIDEBANDS Switch	Set to BOTH providing bandwidths of 2, 4 and 6 KCS with SELECTIVITY CONTROL.
BFO KCS Control	Not functioning.
NOISE LIMITER	OFF, unless necessary to use noise limiter.

CW/SSB RECEPTION

Table IV lists the front panel controls and their respective settings for initial CW/SSB operation. Tune in signals with receiver and operate all receiver controls, except IF and audio, as normally done. (Refer to figure 3.)

TABLE IV. CONTROLS AND SETTINGS FOR CW/SSB RECEPTION

Control	Setting
SLOT FREQUENCY KCS Control	Set to either upper or lower 5. Tune to eliminate co-channel interference.
AM/MCW-CW/SSB Switch	Set to CW/SSB.
VERNIER TUNING KCS Switch	Use as required for fine adjustment of SSB pitch (natural voice) or to move CW signal across passband.
AVC Control	Slow for SSB or fast for CW.
SLOT DEPTH Control	Use only with SLOT FREQUENCY to further attenuate interfering signal.

TABLE IV. CONTROLS AND SETTINGS FOR CW/SSB RECEPTION (cont)

Control	Setting
POWER-AUDIO GAIN Control	Rotate clockwise to turn on SPC-10. Set for desired listening level.
SELECTIVITY KCS	SSB 3 KCS. Use 2 KCS for extreme noise and interference conditions. Use . 5 KCS for CW.
SIDEBANDS Switch	SSB UPPER or LOWER as required. CW LOWER.
BFO KCS Control	SSB set to 0. CW adjust to suit.
NOISE LIMITER	OFF, unless it is necessary to use noise limiter.

PURPOSE AND USE OF CONTROLS

SLOT FREQUENCY KCS CONTROL

This control is used to move a rejection slot 5 KCS either side of the center of the passband. As the slot is only about 1. 5 KCS wide at the 6-db point, it will provide a means for effectively slicing out a portion of the passband containing interference. (See figure 5.) It can also be used to improve one side of the passband selectivity and to further improve SSB reception.

SLOT DEPTH CONTROL

The slot depth control is used in conjunction with the SLOT FREQUENCY KCS control to provide additional attenuation at one particular frequency. The rejection takes place before the input grid of the mixer tube, thus preventing spurious responses and possible overload due to strong interfering signals mixing in the 6BE6 tube. The operation of this control is smooth and positive in eliminating unwanted signals at, or up to, 5 KCS, either side of the passband center.

VERNIER TUNING KCS

This control is effectively a vernier on the mixing oscillator, having a range of ±3 KCS from the passband center. It provides extremely fine tuning useful for SSB operation or for moving the incoming signal across the passband. This feature is especially helpful when the converter is used with receivers not having a high dial tuning ratio.

SELECTIVITY KCS AND SIDEBANDS CONTROLS

These two controls work together to provide exceptional versatility in the proper selection of the desired bandwidth at the correct position in the 60 KC IF passband. Figure 6 is a graph of the IF Passband Frequency Responses. The selectivity on upper or lower sidebands is very close to that obtained with mechanical filters, while some broadening is accomplished in the BOTH sidebands position. This reduces some of the characteristic ringing of mechanical filters and provides a far more pleasing tone for general AM reception.

NOTE

The front panel markings of UPPER and LOWER SIDEBANDS switch have been interchanged and, therefore, do not correspond to the actual selectivity curves. However, when the SPC-10 converter is used with the SP-600 Communications Receiver, the converter front panel markings do correspond to the off-the-air signals. The following paragraphs describe what is happening in the overall system as seen pictorially (looking at the front panel) rather than the actual internal circuitry.

The SELECTIVITY KCS control has four positions indicating the 6-db nominal bandwidths in the UPPER or LOWER sideband positions. For example: if the SELECTIVITY KCS switch were set on 2 KCS and the SIDEBANDS switch to UPPER, the peak, or center of the IF curve would lie 1 KC above the center of the 60 KC passband, or 61 KCS. If the SIDEBANDS switch were set to LOWER, the peak, or center of the IF curve would be at 59 KCS. The 3 KC selectivity position would place the IF curve center at 61. 5 KCS in the UPPER sidebands position, or 58. 5 KCS on the LOWER sidebands position. The IF is aligned at 60 KCS in the . 5 KCS position of the SELECTIVITY KCS switch with the SIDEBANDS switch in the LOWER position.

When receiving CW, place the SELECTIVITY KCS and SIDEBANDS switches to the above positions. If the SIDEBANDS switch is turned to the LOWER position, a slight shift of the selectivity curve off center of 60 KCS will occur. This does not affect operation, but sets the center of the passband slightly off the 60 KC nominal. It is not recommended that the . 5 KC selec-

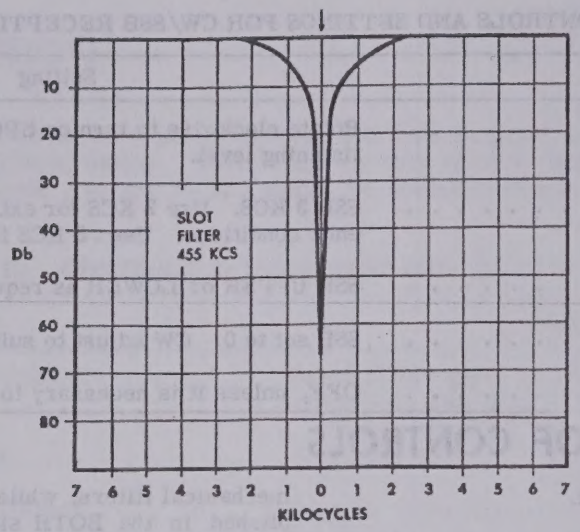
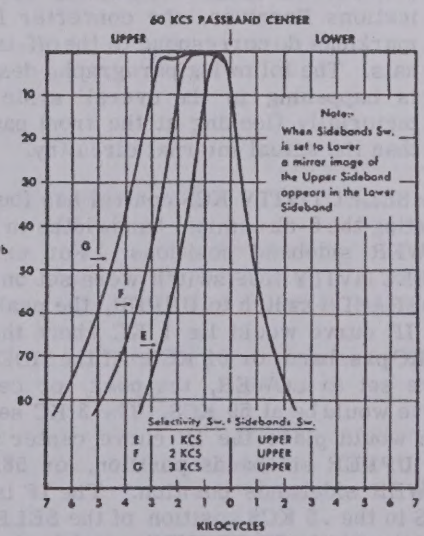


Figure 5. Slot Filter Frequency Response Curves


60 KCS PASSBAND CENTER
UPPER
LOWER
Note:
When Sidebands Sw. is set to Lower a mirror image of the Upper Sideband appears in the Lower Sideband
Db
KILOCYCLES
Selectivity Sw. | Sidebands Sw.
E 1 KCS UPPER
F 2 KCS UPPER
G 3 KCS UPPER

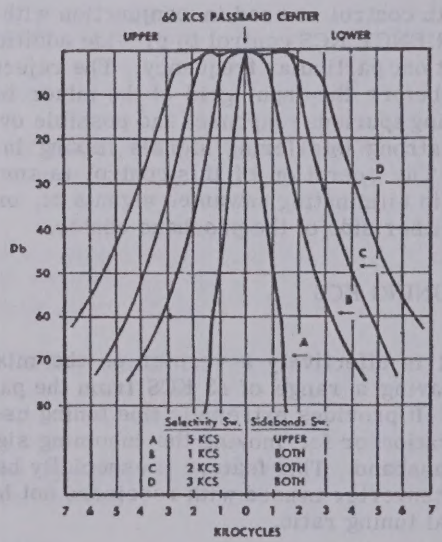


Figure 6. IF Passband, Frequency Response Curves

tivity position be used in the BOTH position of the SIDEBANDS switch. The BOTH position of the SIDEBANDS switch allows the upper and lower sidebands to combine, thus doubling the readings of 1, 2, and 3 KCS of the SELECTIVITY KCS switch to 2, 4, and 6 KCS at 6 db, with the 60-KC passband as the center of the IF selectivity curve. The BOTH position is generally used for regular AM reception.

For SSB reception, the UPPER or LOWER position of the SIDEBANDS switch is used with the SELECTIVITY KCS switch set to 2 or 3 KCS.

INSTALLATION AND OPERATION HINTS

The following notes are included to pass along the results of several years of practical experience in using the SPC-10 under all conditions and with many different receivers.

The SPC-10 is capable of making any reasonably good receiver out-perform even the most expensive presently available receivers. However, as with any other device capable of so many different functions, careful installation and a little experience is necessary before the user will be able to take full advantage of its capabilities.

To obtain the full advantage of the SPC-10 converter, its initial adjustment must be made to the exact intermediate frequency of the receiver with which it will be used. Even if your receiver has a normal IF of 455 KCS (the factory adjusted input frequency of the SPC-10), follow the procedure outlined herein for peaking the input circuit and for adjusting the slot filter. Remember that a variation of only 1 or 2 KCS between the receiver IF output and converter input frequency will affect the performance of the SPC-10. Of course, if the receiver KCS differs markedly from 455 KCS, the IF and slot frequency adjustments must be made before any response can be obtained from the converter.

In adjusting the SPC-10 to a significantly higher input frequency (in the 500 KCS region), it is quite possible to run into the image of 60 KCS. Thus, care must be taken not to tune the SPC-10 to the image by mistake.

Obviously, the image response is the weaker of the two; therefore, tune to the stronger response.

NOTE

> Since slight deviations from 455 KCS (458 KCS, for example) call for only a very minor adjustment of the PASSBAND ADJ. tuning slug, the chance of running into the image response is remote; but the possibility should be kept in mind.

Once the lost frequency has been properly set, rotate the SLOT FREQUENCY KCS control fully left or right to prevent the slot filter from rejecting the center frequency or desired signal. Rotate the control knob toward the center only to remove interference.

The SLOT DEPTH control is actually a very gradual vernier adjustment. In view of this, its filtering effect will not be very noticeable unless proper procedure is employed. The suggested procedure for effective filtering is as follows: Tune in an AM, or constant carrier signal, or the output of a crystal calibrator with a receiver. Place the converter SLOT FREQUENCY KCS control at 5 position. After tuning in the signal for maximum tuning meter deflection, rotate the SLOT FREQUENCY KCS control until the tuning meter indicates a minimum signal. A very definite null or minimum reading will be obtained with the SLOT FREQUENCY KCS control set at, or near, its zero position. Note this meter reading. Without disturbing the SLOT FREQUENCY KCS control, rotate the SLOT DEPTH control until a further reduction in signal strength is indicated by the tuning meter. Once this setting has been established, the SLOT DEPTH control may be left permanently in this position, and all future slot filter adjustments may be made with the SLOT FREQUENCY KCS control only. A periodic check of the SLOT DEPTH control is advisable since it may be rotated by accident.

Since the SPC-10 has a maximum bandwidth of 6 KCS, the bandwidth of all receivers equipped with variable selectivity should be adjusted to no more than 5 or 6 KCS. This will prevent a strong adjacent signal from swamping the receiver's AVC, and causing a decrease in gain and other possible undesirable effects.

In CW reception, it is obvious that if the SPC-10 were used in the 500-cycle bandwidth condition, it would be very difficult to tune with the average receiver dial, or even with some bandspread dials, because of the extreme selectivity of the converter. It is better, therefore, to start with a bandwidth of 1 or 2 KCS and then, when the desired signal is tuned in, to turn the SIDEBANDS switch to LOWER and turn the SELECTIVITY KCS switch to . 5 (500-cycle bandwidth).

Use of the 500-cycle bandwidth will improve the signal-to-noise ratio without the loss of gain normally found in other variable-selectivity circuits.

For the best CW response, always offset the beat-frequency oscillator by 500 to 1000 cycles, especially if the 500-cycle bandwdith position of the SPC-10 is employed.

For best results on single-sideband reception using the SPC-10 Converter, always use the BFO KCS control knob in the straight up or zero position. This will result in maximum low-frequency response from the sideband signal when the band-pass control is employed, as the final adjustment for good speech intelligibility. Should you desire to sacrifice a little low-frequency response, set the beat-frequency oscillator ±1 KC, depending on which sideband is being employed. Usually, for best sounding single-sideband or more natural reproduction (assuming the transmitter is putting out a signal of good quality) the BFO KCS control of the SPC-10 will be at, or near, its zero position.

Practically all heterodynes on AM phone signals can be removed by using the following technique: Assume you are listening to an AM phone signal with a heterodyne on it. The first adjustment to make is to use single-sideband technique. Put the SPC-10 switch in the upper or lower sideband position, using the one that results in the most rejection of the heterodyne. Then adjust the slot filter and the chances are that what is left of the heterodyne can be either greatly attenuated or removed entirely. In some cases, when single-sideband technique is employed on an AM signal and the AM signal has not been tuned to exact resonance in the first place, you may find upon switching sidebands, that the signal disappears or becomes distorted. This is only because you have favored one sideband when making the initial tuning adjustment, so obviously, when you change to the other sideband the receiver is far enough off resonance either to lose the signal or to obtain a distorted AM response. It is also for this reason that the initial tuning adjustments on the SPC-10 are so important.

CIRCUIT THEORY

The Hammarlund SPC-10 Single Sideband Converter is a single conversion, superheterodyne converter that will accept all signals in the range of 450 KCS to 500 KCS with levels from 0.005 to 2 volts. Figure 8 is a schematic diagram of the SPC-10.

The converter contains its own power supply. A-C power is supplied to the primary winding of transformer (T10). Full wave rectifier (V6) and capacitor input filter, consisting of capacitor (C70) and choke (L5) supply the operating B+ voltage for the converter. A 6BE6 mixer oscillator (V1) is used for conversion of the receiver IF (455 KCS) to the converter IF (60 KCS). The input signal is supplied through an IF GAIN control potentiometer (R11) and a bifilar "T" trap, part of the slot filter circuit. The "T" trap filters out interfering signals before they appear on the 6BE6 signal grid. The "T" trap is adjustable over the entire range of 450 KCS to 500 KCS by means of the SLOT FREQUENCY coil (L2. Fine tuning of ±5 KCS is accomplished by the SLOT FREQUENCY KCS control (C11), which is located on the front panel. Resistive balance of the circuit is controlled by the SLOT DEPTH potentiometer (R8).

The mixer-oscillator frequency is controlled between 390 KCS and 440 KCS with the PASSBAND adjustable coil (L6). Fine tuning of ±3 KCS is provided by the VERNIER TUNING KCS control (C4). Both the SLOT DEPTH potentiometer (R8) and the VERNIER TUNING KCS control (C4) are located on the front panel of the converter.

Stable operation of both the BFO and the mixer-oscillator is accomplished with high-C circuits that incorporate temperature compensating capacitors to keep frequency drift to a minimum.

A three-stage IF amplifier (V2, V3, and V11A) follows the 6BE6 mixer. The amplifiers employ six, high-Q, tuned circuits and associated switching that adds and subtracts capacitance to provide various degrees of selectivity over the entire passband range as shown in figure 6.

The IF signal is simultaneously applied to the control grid of the third IF amplifier (V11A) and to the AVC amplifier (V4A). The parallel operation of the two amplifiers provides separate channels for the audio and AVC signals. The AVC amplifier is transformer coupled (T8) to the AVC detector diode (V4B). The output of the AVC detector is applied to the signal grid of the mixer (V1) and the control grid of the first IF amplifier (V2). AVC voltage also serves as an input to control the meter amplifier (V10B) which, in turn, controls the tuning meter. The AVC function switch (S3) grounds the AVC signal in the OFF position. Slow, medium, and fast AVC action is also provided by S3, which switches different RC networks across the AVC detector load resistor (R77). (Each RC network introduces a different time constant in various S3 positions.)

In AM/MCW operation, the output of the AM detector (V11B) is applied to the plate of the Noise limiter (V7) through switch S4 (section 1) and the capacitor (C23). A d-c voltage is also applied from the AM detector to the NOISE LIMITER control (R50) and then to the cathode circuit of (V7) to control the degree of noise limiting. The signal is coupled through the two halves of (V7) with the common cathode load.

When the NOISE LIMITER switch (S5) is at ON position, (V7) functions as a series type limiter, which provides clipping of both positive and negative noise pulses; with the switch OFF, the signal passes through unchanged. The output of the noise limiter is supplied to the grid of the audio amplifier (V8) through the AUDIO GAIN control (R12). The audio output is applied to the control grid of the power amplifier (V9) which supplies the required audio power to the output transformer (T9).

In CW/SSB operation, B+ voltage is supplied to the BFO oscillator (V10A) and to the product detector (V5). The output of the BFO is applied to one grid of V5, the output of the AM detector is applied to the other grid. The product of the two signals (output of V5) represents the audio obtained from single sideband detection and is applied to the noise limiter through resistor (R57) and the AM/MCW-CW/SSB switch (S4). The operation of the converter at this point is exactly as discussed previously.

The meter amplifier (V10B) is one leg of a bridge circuit consisting of resistors R69, R70, R71, and R73. The output of the meter amplifier (V10B) is controlled by AVC voltage, which acts to unbalance the bridge and thus provide the meter indication. The METER ZERO potentiometer (R70) provides for balancing the bridge and nulling the meter. This is accomplished only when there is no AVC signal present (signal input to converter removed). METER SENS potentiometer (R72) limits the current through the meter movement.

PREVENTIVE MAINTENANCE

In order to insure trouble-free operation of the Hammarlund SPC-10 Single Sideband Converter, periodic checks of the equipment should be made and any trouble or fault promptly corrected. It is necessary to remove chassis before performing preventive maintenance. Refer to removal of chassis in service and alignment section. Table V lists the suggested inspection procedure and the intervals at which these inspections should be accomplished for effective preventive maintenance. Refer to figure 9 for location of all parts and for other wiring data.

NOTE

The SPC-10 converter should be blown out and dusted at least twice yearly.

TABLE V. INSPECTION SCHEDULE

Item	Inspection	Interval
Chassis	a. Inspect for signs of corrosion, dirt and moisture.	Monthly
	b. Inspect mechanical action of front and rear panel controls. Check for signs of binding, scraping and proper action.	Monthly
	c. Check INPUT jack (J1) for corrosion, dirt and signs of arcing and overheating.	
	d. Check for signs of arcing and overheating, especially blistered or discolored resistors and charred insulation.	Monthly

SERVICE AND ALIGNMENT PROCEDURE

TEST EQUIPMENT REQUIRED

The following test equipment is required for service and alignment of the SPC-10:

a. 60 KCS Signal Generator with calibrated output attenuator (Accuracy of 60 KCS ±100 cycles).

b. 455 KCS Signal Generator with calibrated output.

c. Vacuum Tube Voltmeter (HP410C or equivalent).

d. 600 ohm audio load (output meter).

e. Loudspeaker (SP-600 loudspeaker or equivalent).

f. Hex Alignment Tool (Supplied with equipment).

g. 3 feet of Interconnecting Cable (RG-59/U) with type PL-259 plugs at each end.

REMOVAL OF CHASSIS

The following procedure is necessary to remove the converter chassis from the enclosing cabinet:

a. Remove four Phillips-head screws and cup washers from each end of converter front panel.

b. Slide converter chassis forward from cabinet.

c. Remove bottom cover plate by removing four Phillips-head screws with lock washers.

d. Remove top cover plate by loosening seven Phillips-head screws.

CONTROL SETTINGS

Table VI lists the controls and their respective settings necessary for the 60 KCS IF and BFO alignment.

TABLE VI. SPC-10 CONTROL SETTINGS FOR 60 KCS IF AND BFO ALIGNMENT

Control	Position
VERNIER TUNING KCS	0
AM/MCW-CW/SSB	AM/MCW
SLOT DEPTH	0
SLOT FREQUENCY KCS	UPPER 5
AUDIO GAIN	Adjust to test requirements
NOISE LIMITER	OFF
BFO KCS	0
SIDEBANDS	LOWER
SELECTIVITY KCS	.5
AVC	OFF
IF GAIN (R11)*	Maximum clockwise
METER ZERO (R70)*	Mid-position
METER SENS (R72)*	Mid-position

* Rear panel controls.

60 KCS IF AND BFO ALIGNMENT

a. Turn function switch on VTVM to negative DC volts.

b. Connect ground lead of VTVM to ground and positive lead to junction of R77 and L4. (See figure 7.)

c. Connect signal generator to INPUT jack J1 of converter. Set to 60 KCS, unmodulated.

d. Turn power on and allow equipment to warm up for 10 minutes.

e. Adjust signal generator gain until VTVM indicates -5 volts.

f. Peak IF transformers T11, T6, T5, T4, T3, T2, and T1 for maximum negative DC volts. (See figure 4.)

NOTE

Reduce the signal generator gain as required to maintain a -5 volt signal on the VTVM. If -5 volts DC cannot be obtained with large amounts of signal voltage proceed to step g. If the required voltage is obtained in step f, proceed to step k.

g. Connect 60 KCS signal generator positive lead to pin 1 of V3.

h. Peak IF transformers T11, T6, and T5.

i. Reconnect signal generator to input jack J1.

j. Peak IF transformers T4, T3, T2, and T1.

k. Repeat step f noting the input signal level required to produce a -5 volt deflection on the VTVM.

l. Raise and lower the input signal gain to severely overload the converter. Then, adjust the gain until the meter reads -5 volts. Compare the input signal level required for this deflection with the input signal noted in step k.

m. Repeat steps k and l readjusting the IF transformers as required.

NOTE

An input signal of approximately 5,000 microvolts will result in a -3 volt reading on the VTVM if the converter is functioning normally.

n. Turn AM/MCW-CW-SSB control to CW/SSB position.

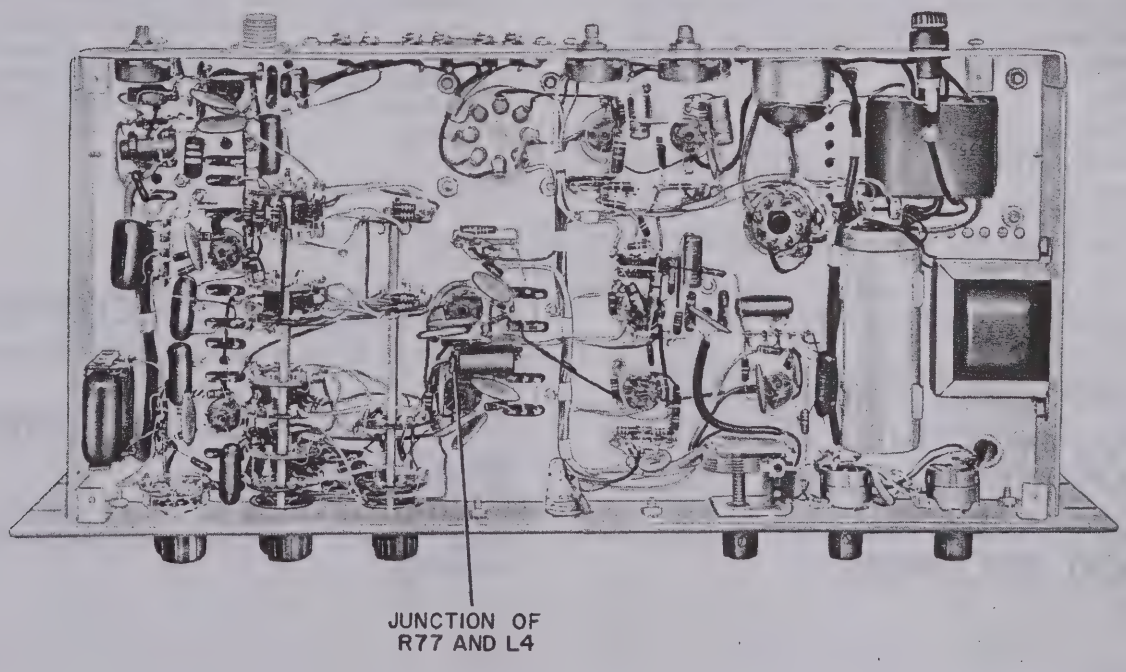


Figure 7. SPC-10 Single Sideband Converter, Bottom View

o. Align BFO tuning coil T7 for zero beat. Return AM/MCW-CW/SSB control to AM/MCW position.

455 KCS ALIGNMENT

a. Adjust signal generator for an output of 455 KCS, unmodulated, and connect to INPUT jack J1. Set SPC-10 controls in accordance with table VI.

b. Adjust PASSBAND ADJ. control (L6) until maximum deflection is obtained on VTVM. Check VERNIER TUNING KCS pointer position for 0 indication.

c. Check SLOT FREQUENCY KCS pointer indication at stop position, and adjust if necessary. Move to 0 position.

d. Adjust SLOT FREQUENCY coil (L2) for minimum output on VTVM.

e. Adjust gain of signal generator and readjust SLOT FREQUENCY coil (L2) if necessary. Simultaneously adjust SLOT DEPTH control until VTVM indicates a null.

NOTE

After adjustment, the best null point will be obtained with SLOT FREQUENCY KCS control at 0. The SLOT DEPTH control must null at least one panel marking from either end of its range.

f. Place SLOT FREQUENCY KCS control to UPPER 5 position.

g. Turn power off, remove signal generator and VTVM.

h. Fasten top and bottom covers to chassis.

IF GAIN (R11), METER ZERO (R70) AND METER SENS (R72) ADJUSTMENTS WHEN USED WITH HAMMARLUND SP-600 RECEIVERS

a. Disconnect loudspeaker from rear of converter.

b. Connect 600 ohm output meter to speaker terminals on terminal strip at rear of converter.

c. Feed into the converter a 455 KCS 30% modulated signal of 5000 microvolts.

d. With SELECTIVITY KCS at 3 position and SIDEBANDS switch at BOTH, the audio power output should be greater than 1/2 watt with the IF GAIN at maximum and the AUDIO GAIN at maximum.

e. Set the METER SENS control to the exact center of its mechanical range.

f. With no signal into the converter adjust the METER ZERO control for zero reading on the tuning meter.

g. Feed in a 455 KCS (30% modulated 400 cycle) signal of 0.4 volt to the converter.

h. Adjust the IF GAIN control for a reading of 5 on the tuning meter.

i. Remove signal and recheck the meter zero. Reset if necessary and repeat above.

NOTE

A signal of 0.4 volt into the converter corresponds to the i-f output level of the SP-600 receiver with a signal input of 1 microvolt but eliminates any variable factors due to noise and avc action of the receiver at this input level.

REPLACEMENT OF CHASSIS

Replace cover on chassis by reversing removal procedure.

VOLTAGE AND RESISTANCE READINGS

Tables VII and VIII list the proper voltage and resistance values, respectively, at tube sockets of the converter.

TABLE VII. TUBE SOCKET VOLTAGES

Tube	1	2	3	4	5	6	7	8	9
V1 MIXER 6BE6	-6.4	0	6.3AC	0	200	70	-0.2	--	--
V2 1st IF 6BA6	0	0	6.3AC	0	188	82	1.2	--	--
V3 2nd IF 6BA6	0	0	6.3AC	0	188	84	1.4	--	--
V4 3rd IF AVC 6AZ8	185	118	1.6	6.3AC	0	0	6	0	0
V5 Prod. Det. 12AU7	188	0	6.0	0	0	88	0	6	6.3AC
V6 Rectifier 5Y3-GT	N C	233	N C	230AC	N C	230AC	N C	233	--
V7 Noise Limiter 6AL5	32	32	6.3AC	0	32	0	32	--	--
V8 1st Audio Amp. 6AV6	0	1.2	6.3AC	0	0	0	95	--	--
V9 Power Output 6AQ5	0	12.5	6.3AC	0	220	205	0	--	--
V10 BFO-Meter Amp. 12AU7	150	0	6 to 6.8*	0	0	188	120	124	6.3AC
V11 3rd IF Amp. AM Det. 6AZ8	185	118	1.6	6.3AC	0	0	0	-0.4	-0.4

* Varies with METER ZERO (R70) and METER SENS (R72).

Measured with VTVM, 117 VAC Line Voltage. Input cable disconnected. SELECTIVITY 3 KCS, SIDEBANDS - BOTH, LIMITER - OFF, IF GAIN - MAX., Reception - CW/SSB, AVC OFF. All voltages are positive and D. C. unless otherwise specified.

TABLE VIII. TUBE SOCKET RESISTANCES

Tube	1	2	3	4	5	6	7	8	9
V1 MIXER 6BE6	18K	0.4	0.1	0	22K	45K	440K	--	--
V2 1st IF 6BA6	470K	0	0.1	0	22K	64K	120	--	--
V3 2nd IF 6BA6	470K	0	0.1	0	22K	64K	120	--	--
V4 3rd IF AVC 6AZ8	22K	55K	180	0.1	0	470K	10K	10	10
V5 Prod. Det. 12AU7	20K	470K	820K	0	0	57K	100K	820	0.1
V6 Rectifier 5Y3-GT	NC	20K	NC	64	NC	64	NC	20K	--
V7 Noise Limiter 6AL5	220K	1.3 Meg.	0.1	0	220K	0	1.6 Meg.	--	--
V8 1st Audio Amp. 6AV6	470K	5.6K	0.1	0	0	0	500K	--	--
V9 Power Output 6AQ5	470K	430	0.1	0	21K	20K	470K	--	--
V10 BFO-Meter Amp. 12AU7	17.5K	0	780 to 2.5K *	0	0	20K	520K	47K	0.1
V11 3rd IF Amp. AM Det. 6AZ8	22K	55K	180	0.1	0	470K	0	270K	270K

* Varies with METER ZERO (R70) and METER SENS (R72).

Measured with VTVM on Ohmmeter scale. AC Power Plug and Input cable disconnected. SELECTIVITY - 3 KCS, SIDEBANDS - BOTH, LIMITER - OFF, IF GAIN - MAX., Reception - CW/SSB, AVC OFF.

VENDOR'S CODES

Code	Vendor	Code	Vendor
60	Hammarlund Co., Inc. New York, N. Y.	130	Good All Electric Mfg. Co. Ogallala, Nebr.
70	Electron Tube Division Radio Corporation of America Indianapolis, Ind.	140	Cornell Dubilier Electric Corp. South Plainfield, N. J.
80	Bussman Fuse Division McGraw-Edison Co. St. Louis, Mo.	150	Allen-Bradley Co. Milwaukee, Wis.
90	Erie Resistor Corp. Erie, Penna.	170	Amphenol-Borg Electronics Corp. Chicago, Ill.
100	Lamp Division of Consumer Products Group General Electric Co. Nela Park Cleveland, Ohio	190	Aerolite Electronic Corp. Union City, N. J.
110	Electro Motive Mfg. Co. Willimantic, Conn.	210	Kurz-Kasch, Inc. Chicago, Ill.
120	Radio Materials Co. Chicago, Ill.	240	Switchcraft, Inc. Chicago, Ill.

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
C1	CAPACITOR, FIXED, MICA DIELECTRICS; 12000 UUF ±5%; 500 VDCW	110	DM-19		1	12-8770.72	4A	
C2	CAPACITOR, FIXED, CERAMIC DIELECTRIC; 500 UUF ±5%; 1000 VDCW	120	JL500		3	12-8788.66	5A	
C3	CAPACITOR, FIXED, CERAMIC DIELECTRIC; 47 UUF ±5%; 500 VDCW; Temp coef-N750	90	301K250AB47-5		1	12-8786.42	5A	

SPC-10 REPLACEABLE PARTS LIST

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
C4	CAPACITOR, VARIABLE, AIR DIELECTRIC; 26.8 to 27.2 UUF; Passband	60	42040-1		1	12-8787.89	329C	✓
C5	CAPACITOR, FIXED, CERAMIC DIELECTRIC; 0.02 UF + 80-20%; 600 VDCW	120	B20,000		12	12-8788.71	5A	
C6	CAPACITOR, FIXED, MICA DIELECTRIC; 100 UUF ±10%; 500 VDCW	110	DM-15		1	12-8761.26	4A	
C7	CAPACITOR, FIXED, CERAMIC DIELECTRIC; 0.01 UF GMV; 600 VDCW	120	B10,000		7	12-8788.72	5A	
C8	CAPACITOR, FIXED, PLASTIC DIELECTRIC; 0.033 UF ±10%; 200 VDCW	130	600UE33392W		1	12-8786.43	4A	
C9	CAPACITOR, FIXED, MICA DIELECTRIC; 24 UUF ±10%; 500 VDCW	110	DM-15		3	12-8783.60	4A	
C10	Same as C5							
C11	CAPACITOR, VARIABLE, AIR DIELECTRIC; 54.4 UUF	60	42041-1		1	12-8787.90	329C	✓
C12	Same as C5							
C13	Same as C9							
C14	Same as C5							
C15	Same as C2							
C16	Same as C7							
C17	CAPACITOR, FIXED, MICA DIELECTRIC; 780 UUF ±5%; 300 VDCW	110	DM-15		1	12-8785.95	4A	

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
C18	CAPACITOR, FIXED, MICA DIELECTRIC; 5 UUF ±10% 500 VDCW	110	DM-15		1	12-8783.62	4A	
C20	CAPACITOR, FIXED, CERAMIC DIELECTRIC; 0.002 UF GMV; 1000 VDCW	120	B2000		1	12-8788.73	5A	
C21	Same as C5							
C22	Same as C2							
C23	Same as C5							
C24	Same as C7							
C25	CAPACITOR, FIXED, PAPER DIELECTRIC; 0.047 UF ±20%; 400 VDCW	110	PD-3	MIL-C-91A	4	12-8787.87	3B	
C26	CAPACITOR, FIXED, MICA DIELECTRIC; 31 UUF ±2%; 500 VDCW	110	DM-15		2	12-8786.44	4A	
C27	CAPACITOR, FIXED, MICA DIELECTRIC; 29 UUF ±2%; 500 VDCW	110	DM-15		4	12-8786.45	4A	
C28	CAPACITOR, FIXED, MICA DIELECTRIC; 20 UUF ±0.5 UUF; 500 VDCW	110	DM-15		6	12-8786.46	4A	
C29	CAPACITOR, FIXED, MICA DIELECTRIC; 3 UUF ±0.5 UUF; 500 VDCW	110	DM-15		4	12-8786.47	4A	
C30	CAPACITOR, FIXED, MICA DIELECTRIC; 28 UUF ±2%; 500 VDCW	110	DM-15		2	12-8786.48	4A	
C31	CAPACITOR, FIXED, MICA DIELECTRIC; 27 UUF ±2%; 500 VDCW	110	DM-15		2	12-8786.49	4A	

SPC-10 REPLACEABLE PARTS LIST

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
C32	Same as C27							
C33	Same as C26							
C34	Same as C27							
C35	Same as C28							
C36	Same as C29							
C37	Same as C30							
C38	Same as C31							
C39	Same as C27							
C40	Same as C29							
C41	CAPACITOR, FIXED, MICA DIELECTRIC; 9 UUF ±0.5 UUF; 500 VDCW	110	DM-15		3	12-8786.50	4A	
C42	CAPACITOR, FIXED, MICA DIELECTRIC; 10 UUF ±0.5 UUF; 500 VDCW	110	DM-15		1	12-8770.24	4A	
C43	Same as C28							
C44	Same as C28							
C45	CAPACITOR, FIXED, MICA DIELECTRIC; 16 UUF ±0.5 UUF; 500 VDCW	110	DM-15		2	12-8786.51	4A	
C46	CAPACITOR, FIXED, MICA DIELECTRIC; 7 UUF ±0.5 UUF; 500 VDCW	110	DM-15		5	12-8786.52	4A	
C47	Same as C41							
C48	CAPACITOR, FIXED, MICA DIELECTRIC; 14 UUF ±0.5 UUF; 500 VDCW	110	DM-15		2	12-8786.53	4A	

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
C49	Same as C28							
C50	Same as C28							
C51	Same as C45							
C52	Same as C46							
C53	Same as C41							
C54	Same as C48							
C55	CAPACITOR, FIXED, PAPER DIELECTRIC; 0.1 UF ±20%; 200 VDCW	110	PD-3	MIL-C-91A	3	12-8787.88	3B	
C56	CAPACITOR, FIXED, CERAMIC DIELECTRIC; 330 UUF ±5%; 1000 VDCW; Temp coef-N750	120	Type C		1	12-8788.74	5A	
C57	CAPACITOR, VARIABLE, AIR DIELECTRIC; BFO; 98.5 UUF variation	60	42042-1		1	12-8787.91	329C	✓
C58	Same as C25							
C59	Same as C25							
C60	CAPACITOR, FIXED, ELECTROLYTIC; 20 UF; 25 VDCW	140	NL20-25		2	12-8788.75	6B	
C61	Same as C46							
C62	Same as C25							
C63	CAPACITOR, FIXED, MICA DIELECTRIC; 21 UUF ±0.5 UUF; 500 VDCW	110	DM-15		2	12-8786.54	4A	
C64	Same as C29							

SPC-10 REPLACEABLE PARTS LIST

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
C65	Same as C46							
C66	Same as C46							
C67	Same as C63							
C68	CAPACITOR, FIXED, CERAMIC DIELECTRIC; 0.01 UF GMV;1400 VDCW	120	IF 10,000		2	12-8788.69	5A	
C69	Same as C68							
C70	CAPACITOR, FIXED, ELECTROLYTIC; Dry; 3 X 20 UF; 450 VDCW		CE33F200R	MIL-C-62A	1	12-8243.00	6B	
C71	Same as C7							
C72	CAPACITOR, FIXED, MICA DIELECTRIC; 47 UUF ±10%; 500 VDCW	110	DM-15		1	12-8783.42	4A	
C73	CAPACITOR, FIXED, PLASTIC DIELECTRIC; 0.01 UF ±10%; 400 VDCW	130	600UE10394W		2	12-8786.56	4A	
C74	Same as C7							
C75	Same as C7							
C76	Same as C7							
C77	Same as C7							
C78	Same as C55							
C79	CAPACITOR, FIXED, CERAMIC DIELECTRIC; 0.01 UF ±10%; 1000 VDCW	120	Type U		1	12-8788.68	5A	
C80	Same as C55							

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
C81	CAPACITOR, FIXED, PAPER DIELECTRIC; 0.5 UF ±20%; 200 VDCW	110	PD-5	MIL-C-91A	2	12-8788.70	3B	
C82	Same as C81							
C83	Same as C9							
C84	Same as C5							
C85	Same as C5							
C86	Same as C5							
C87	Same as C5							
C88	Same as C5							
C89	Same as C5							
C90	CAPACITOR, FIXED, MICA DIELECTRIC; 220 UUF ±5%; 500 VDCW	110	DM-15		2	12-8770.50	4A	
C91	Same as C90							
C92	Same as C60							
F1	FUSE, CARTRIDGE; 2 AMP at less than 250 V; 1/4 inch by 1-1/4 inch; quickacting	80	AGC2		1	10-0626.00	163B	
I1	LAMP, INCANDESCENT; 0.15 AMP; 6.3 V AC; Single contact, miniature bayonet; "Mazda"	100	47		1	27-0075.00	351	
J1	CONNECTOR, RECEPTACLE, ELECTRICAL; UHF	170	83-1R		1	07-3035.00	7733B	
J2	JACK, TELEPHONE; 0.25 inch hole DIA; Tip and sleeve	240	12-A		1	07-4020.00	62C	

SPC-10 REPLACEABLE PARTS LIST

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
J3	CONNECTOR, RECEPTACLE, ELECTRICAL; 2 male contacts	170	61-M10		1	07-8079.26	7733B	
L1	COIL, RADIO FREQUENCY; Bifilar wound; 455 KC	60	42032-1		1	13-7406.90	3704A	✓
L2	COIL, RADIO FREQUENCY; 110 UH; 180 W at 450 KC	60	42811-1		1	13-7406.95	3704A	✓
L4	COIL, RADIO FREQUENCY; 330 MH ±20%; 72 ohms ±10% DC; 4.9 MA DC at 70% rated L	60	42019-1		1	13-7402.70	3704A	✓
L5	REACTOR; 8 H at 100 MA DC 375 ohms ±15% DC	60	38939		1	13-7400.50	349A	✓
L6	COIL, RADIO FREQUENCY; Passband tuning; 130 to 230 UH	60	42813-1		1	13-7402.75	3704A	✓
M1	METER, ARBITRARY SCALE; 0-1.0 MA DC movement ±10%; 60 ohms DC; Clear polystrene plastic case; Lance pointer	60	26149-6		1	30-4984.00	8522	✓
P1	CONNECTOR, PLUG, ELECTRICAL; UHF	170	83-1SP		1	07-2040.00	814B	
R1	RESISTOR, FIXED, COMPOSITION; 33 ohm ±5%; 0.5 W	150	EB3305	MIL-R-11A	1	11-0132.20	64A	
R2	RESISTOR, FIXED, COMPOSITION; 22K ±10%; 0.5 W	150	EB2231	MIL-R-11A	1	11-0581.00	64A	
R3	RESISTOR, FIXED, COMPOSITION; 470K ±10%; 0.5 W	150	EB4741	MIL-R-11A	8	11-0817.00	64A	

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
R4	RESISTOR, FIXED, COMPOSITION; 120 ohm ±5%; 0.5 W	150	EB1215	MIL-R-11A	3	11-0199.00	64A	
R5	Same as R3							
R6	Same as R4							
R7	RESISTOR, FIXED, COMPOSITION; 10K ±10%; 0.5 W	150	EB1031	MIL-R-11A	5	11-0521.00	64A	
R8	RESISTOR, VARIABLE COMPOSITION; 200 ohm ±10%; 1 W	60	15381-4		1	11-9889.63	8B	✓
R9	RESISTOR, FIXED, COMPOSITION; 220K ±10%; 0.5 W	150	EB2241	MIL-R-11A	7	11-0764.00	64A	
R10	RESISTOR, FIXED, COMPOSITION; 100K ±10%; 0.5 W	150	EB1041	MIL-R-11A	4	11-0714.00	64A	
R11	RESISTOR, VARIABLE, COMPOSITION; 10K ±20%; 1 W	60	15381-3		1	11-9889.66	8B	✓
R12	RESISTOR, VARIABLE, COMPOSITION; 1 MEGO ±20%; 1 W	60	15381-6		1	11-9889.68	8B	✓
R13	Same as R7							
R14	RESISTOR, FIXED, COMPOSITION; 330K ±10% 0.5 W	150	EB3341	MIL-R-11A	5	11-0795.00	64A	
R15	RESISTOR, FIXED, COMPOSITION; 27K ±10%; 2 W	150	HB2731	MIL-R-11A	1	11-1054.00	64A	

SPC-10 REPLACEABLE PARTS LIST

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
R16	RESISTOR, FIXED, COMPOSITION; 2.2K ohm ±10%; 0.5 W	150	EB2221	MIL-R-11A	5	11-0395.00	64A	
R17	Same as R14							
R18	Same as R14							
R19	Same as R5							
R20	RESISTOR, FIXED, COMPOSITION; 820 ohm ±10%; 0.5 W	150	EB8211	MIL-R-11A	1	11-0332.00	64A	
R21	Same as R10							
R22	Same as R7							
R23	RESISTOR, FIXED, COMPOSITION; 47K ±10%; 0.5 W	150	EB4731	MIL-R-11A	7	11-0647.00	64A	
R24	Same as R16							
R25	Same as R14							
R26	Same as R14							
R27	Same as R9							
R28	Same as R16							
R29	Same as R23							
R30	Same as R9							
R31	Same as R9							
R32	Same as R10							
R33	Same as R9							

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
R34	RESISTOR, FIXED, COMPOSITION; 1.0 MEGO ±10%; 0.5 W	150	EB1051	MIL-R-11A	1	11-0862.00	64A	
R35	Same as R9							
R36	RESISTOR, FIXED, COMPOSITION; 1K ±10%; 0.5 W	150	EB1021	MIL-R-11A	1	11-0343.00	64A	
R37	Same as R9							
R38	Same as R23							
R39	Same as R23							
R40	Same as R3							
R41	Same as R7							
R42	RESISTOR, FIXED, COMPOSITION; 430 ohm ±5%; 1 W	150	GB4315	MIL-R-11A	1	11-9879.75	64A	
R43	Same as R3							
R44	Same as R3							
R45	Same as R23							
R46	Same as R3							
R47	Same as R23							
R48	Same as R3							
R49	Same as R23							
R50	RESISTOR, VARIABLE, COMPOSITION; 500K ±10%; 1 W	60	15381-5		1	11-9889.67	8B	✓

SPC-10 REPLACEABLE PARTS LIST

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
R51	RESISTOR, FIXED, COMPOSITION; 1.1 K ±5%; 0.5 W	150	EB1125	MIL-R-11A	1	11-0350.20	64A	
R52	RESISTOR, FIXED, COMPOSITION; 5.6K ±10%; 0.5 W	150	EB5621	MIL-R-11A	1	11-0479.20	64A	
R53	RESISTOR, FIXED, COMPOSITION; 27K ±10%; 0.5 W	150	EB2731	MIL-R-11A	1	11-0600.00	64A	
R54	Same as R7							
R55	RESISTOR, FIXED, COMPOSITION; 1.8K ±10%; 0.5 W	150	EB1821	MIL-R-11A	1	11-0381.20	64A	
R56	RESISTOR, FIXED, COMPOSITION; 270 ohm ±10%; 0.5 W	150	EB2711	MIL-R-11A	1	11-0252.00	64A	
R57	Same as R10							
R58	RESISTOR, FIXED, COMPOSITION; 1.5K ±10%; 0.5 W	150	EB1521	MIL-R-11A	1	11-0941.00	64A	
R59	RESISTOR, FIXED, COMPOSITION; 47 ohm ±5%; 0.5 W	150	EB4705	MIL-R-11A	1	11-0143.00	64A	
R60	Same as R4							
R61	Same as R3							
R62	RESISTOR, FIXED, COMPOSITION; 180 ohm ±10%; 0.5 W	150	EB1811	MIL-R-11A	2	11-1025.00	64A	
R63	RESISTOR, FIXED, COMPOSITION; 33K ±10%; 0.5 W	150	EB3331	MIL-R-11A	2	11-0617.00	64A	

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Time Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
R64	Same as R16							
R65	Same as R62							
R66	Same as R63							
R67	Same as R16							
R68	RESISTOR, FIXED, COMPOSITION; 5.6K ±10%; 1 W	150	GB5621	MIL-R-11A	2	11-0186.00	64A	
R69	RESISTOR, FIXED, COMPOSITION; 22K ±10%; 1 W	150	GB2231	MIL-R-11A	1	11-1005.00	64A	
R70	RESISTOR, VARIABLE, COMPOSITION; 300 ohm ±10%; 1 W	60	15381-1		1	11-9889.69	8B	✓
R71	RESISTOR, FIXED, COMPOSITION; 820 ohm ±5%; 0.5 W	150	EB3011	MIL-R-11A	1	11-9883.96	64A	
R72	RESISTOR, VARIABLE, COMPOSITION; 2.5K ±20%	160	15381-2		1	11-9889.65	8B	✓
R73	RESISTOR, FIXED, COMPOSITION; 2.7K ±5%; 0.5 W	150	EB2725	MIL-R-11A	1	11-0413.20	64A	
R74	Same as R68							
R75	RESISTOR, FIXED, COMPOSITION; 680 ohm ±10% 0.5 W	150	EB6811	MIL-R-11A	1	11-0318.40	64A	
R76	RESISTOR, FIXED, COMPOSITION; 27 ohm ±10%; 0.5 W	150	EB2701	MIL-R-11A	1	11-9877.00	64A	

SPC-10 REPLACEABLE PARTS LIST

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
R77	RESISTOR, FIXED, COMPOSITION; 1 MEGO ±10% 0.5 W	150	EB1051	MIL-R-11A	1	11-0862.00	64A	
S1	SWITCH, ROTARY; Selectivity; 4 POS; 30° throw; 8 WAF	60	42021-1		1	08-9690.90	907C	✓
S2	SWITCH, ROTARY; Sidebands; 30° throw; 4 WAF	60	42022-1		1	08-9691.00	907C	✓
S3	SWITCH, ROTARY; AVC; 1 P, 4 POS; 30° throw; 1 WAF	60	42822-1		1	08-9690.70	907C	✓
S4	SWITCH, ROTARY; AM; 2 P, 2 POS; 30° throw; 1 WAF	60	42037-3		1	08-9691.10	907C	✓
S5	SWITCH, ROTARY; SPDT; 125 V, 3A; 100°C (supplied with R50)	60	15381-5	Not Supplied	1	Separately	907C	✓
S6	SWITCH, ROTARY; SPST; 125 V, 3A; 250 V, 1 V; 100°C (supplied with R12)	60	15381-6	Not Supplied	1	Separately	907C	✓
T1	TRANSFORMER, INTERMEDIATE FREQUENCY; 60KC	60	42812-1		6	13-7400.60	297A	✓
T2	Same as T1							
T3	Same as T1							
T4	Same as T1							
T5	Same as T1							
T6	Same as T1							

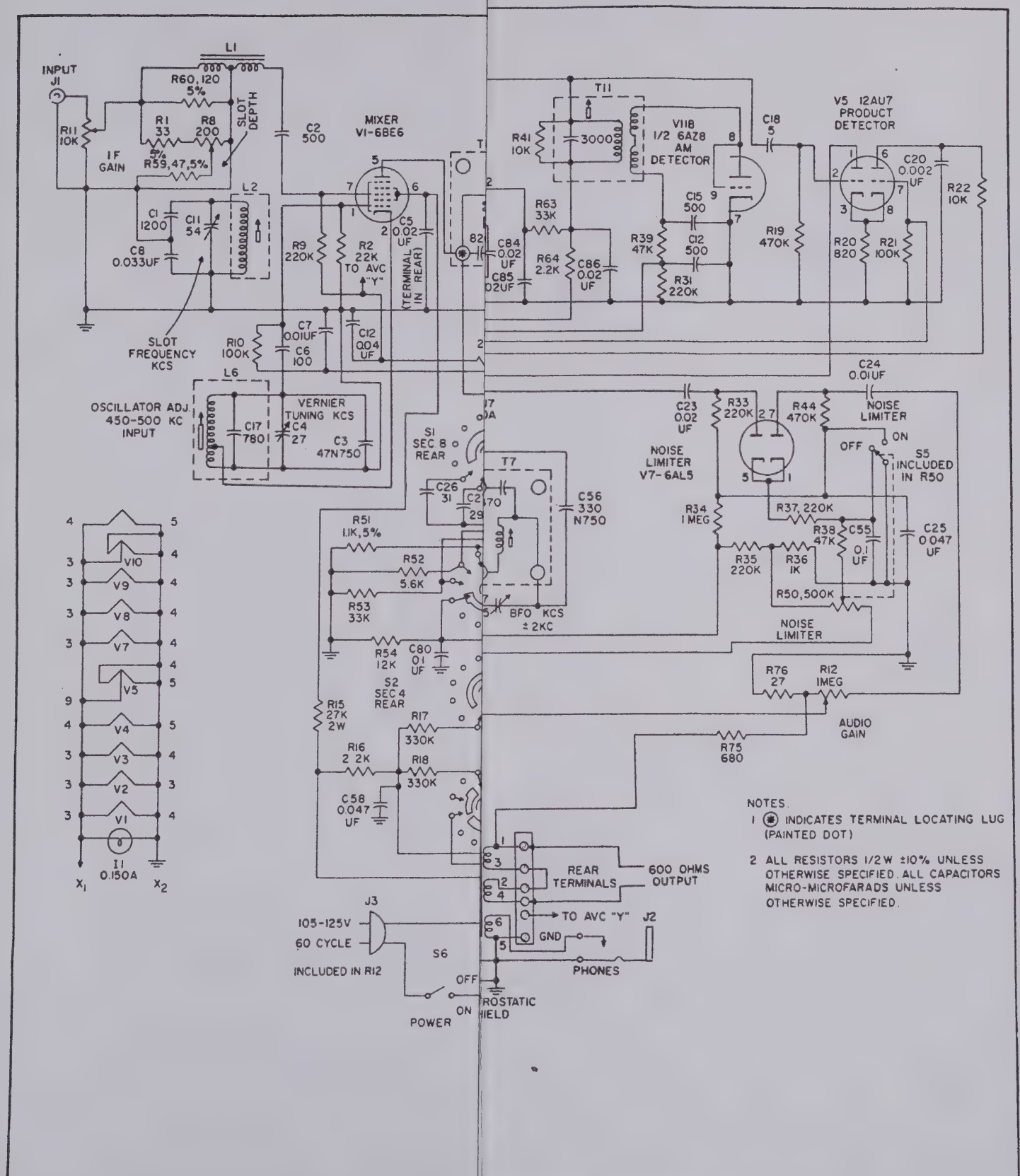
Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
T7	TRANSFORMER, INTER-MEDIATE FREQUENCY; 60KC	60	42812-4		1	13-7400.55	297A	✓
T8	TRANSFORMER, INTER-MEDIATE FREQUENCY; Bifilar Wound Secondary; 22.0 ohm PRIM, 18.5 ohm SEC NO. 1, 18.5 ohm SEC NO. 2	60	42170-1		2	13-7400.65	297A	✓
T9	TRANSFORMER, AUDIO FREQUENCY; Output; 440 ohm ±15% PRIM, 41 ohm SEC, 41 ohm SEC, 700 ohm SEC; 300 to 3500 CPS FREQ response; 2-1/8 inch to 2-3/16 inch X 2-1/8 inch X 2-3/16 inch X 2-7/8 inch + 1/8 - 1/16	60	31086-2	MIL-T-27	1	13-7408.00	387A	✓
T10	TRANSFORMER, POWER, STEP-DOWN AND STEP-UP; 115 V, 60 CPS PRIM; 230 V, 110 MA DC SEC NO. 1; 6.3 V, 3.6 A SEC NO. 2; 5.0 V 3.0 A SEC NO. 3; 2-13/16 inch X 3-3/8 inch X 3-1/4 inch	60	38938-1		1	13-7400.70	370A	✓
T11	Same as T8							
V1	ELECTRON TUBE; Mixer-oscillator	70	6BE6	MIL-E-1	1	09-1455.00	1A	
V2	ELECTRON TUBE; 1st IF Amplifier	70	6BA6	MIL-E-1	2	09-1445.00	1A	
V3	Same as V2							
V4	ELECTRON TUBE; 3rd IF Amplifier; AM detector	70	6AZ8	MIL-E-1	2	09-9972.73	1A	

SPC-10 REPLACEABLE PARTS LIST

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
V5	ELECTRON TUBE; Product detector	70	12AU7	MIL-E-1	2	09-3095.00	1A	
V6	ELECTRON TUBE; Rectifier	70	5Y3-GT/G	MIL-E-1	1	09-1190.00	1A	
V7	ELECTRON TUBE; Limiter, electrical noise	70	6AL5	MIL-E-1	1	09-1345.00	1A	
V8	ELECTRON TUBE; 1st AF Amplifier	70	6AV6	MIL-E-1	1	09-1410.00	1A	
V9	ELECTRON TUBE; Power Amplifier	70	6AQ5	MIL-E-1	1	09-1361.00	1A	
V10	Same as V5							
V11	Same as V4							
XDS1	LAMPHOLDER	190	X1300		1	27-3330.00	8311	
XF1	FUSEHOLDER	80	HKP-Q		1	10-5096.00	244B	
XV1	SOCKET, ELECTRON TUBE; Miniature; 7 Pin		TSE7T101		6	07-6044.00	376C	
XV2	Same as XV1							
XV3	Same as XV1							
XV4	SOCKET, ELECTRON TUBE; Miniature; 9 Pin		TS103P01		4	07-6090.00	376C	
XV5	Same as XV4							
XV6	SOCKET, ELECTRON TUBE; 8 Pin	170	77M1P8T		1	07-6068.00	376C	
XV7	Same as XV1							
XV8	Same as XV1							
XV9	Same as XV1							

SPC-10 REPLACEABLE PARTS LIST

Reference Designation	Name of Component and Description	Mfr's Code	Manufacturer's Part Number	Specification Designation	No. Times Used in Equipment	FAA Catalog Number	D. P. Number	* Spare Parts ✓ Parts Peculiar
XV10	Same as XV4							
XV11	Same as XV4							
	KNOB; Black	210	S-647-1		1	22-3466.00	1433	
	KNOB; Black	210	S-647-1L		1	22-3465.00	1433	
	KNOB; Black	210	S-657-1L		1	22-3467.00	1433	
	POINTER, DIAL	60	42043-1		1	22-3468.00	4891	✓
	SHIELD, ELECTRON TUBE		TS102U01	JAN-S-28A1	1	09-9745.02	5520B	
	SHIELD, ELECTRON TUBE		TS102U02	JAN-S-28A1	4	09-9744.00	5520B	
	SHIELD, ELECTRON TUBE		TS102U03	JAN-S-28A1	1	09-9745.00	5520B	
	SHIELD, ELECTRON TUBE		TS103U02	JAN-S-28A	4	09-9745.07	5520B	
	TERMINAL BOARD	60	16650-103		11	19-1627.00	254B	✓
	TERMINAL BOARD	60	16650-109		1	19-1626.00	254B	✓
	TERMINAL BOARD	60	16650-12		2	19-1628.00	254B	✓
	TERMINAL BOARD	60	42819-1		6	19-1629.00	254B	✓

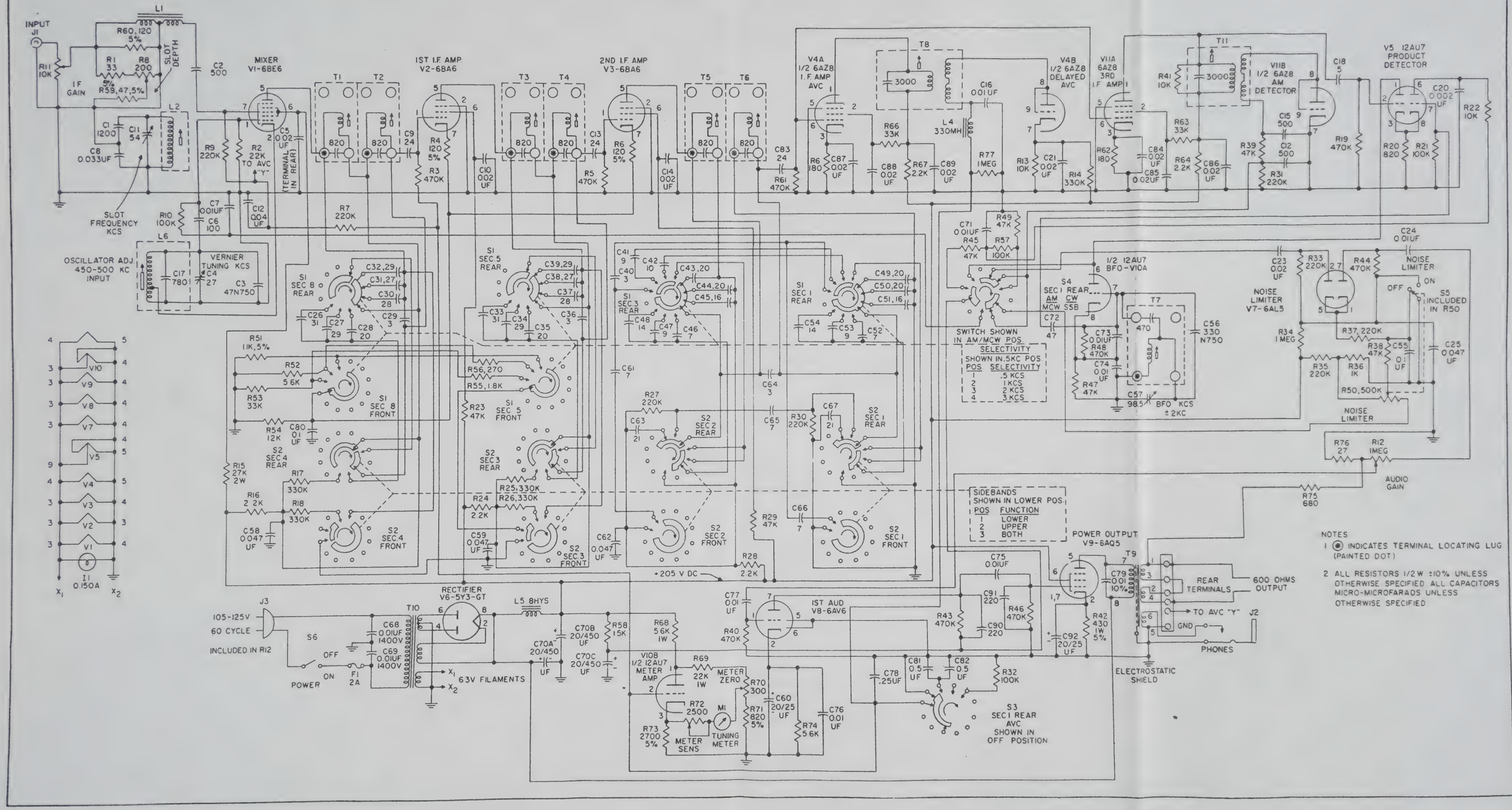


NOTES.

1 ⊛ INDICATES TERMINAL LOCATING LUG (PAINTED DOT)

2 ALL RESISTORS 1/2 W ±10% UNLESS OTHERWISE SPECIFIED. ALL CAPACITORS MICRO-MICROFARADS UNLESS OTHERWISE SPECIFIED.

Sideband Converter, Schematic Diagram



NOTES

1. ⊛ INDICATES TERMINAL LOCATING LUG (PAINTED DOT)
2. ALL RESISTORS 1/2 W ±10% UNLESS OTHERWISE SPECIFIED. ALL CAPACITORS MICRO-MICROFARADS UNLESS OTHERWISE SPECIFIED.

Figure 8. SPC-10 Single Sideband Converter, Schematic Diagram

ESTABLISHED 1910

ESTABLISHED 1910